(No Model.) 2 Sheets—Sheet 1.

W. C. BRAY.

MACHINE FOR SETTING LACING STUDS.

No. 261,526. Patented July 25, 1882.

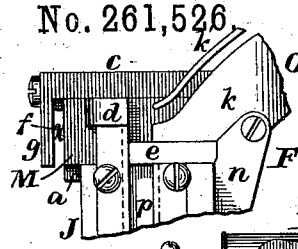


Fig. 5.

Fig. 1.

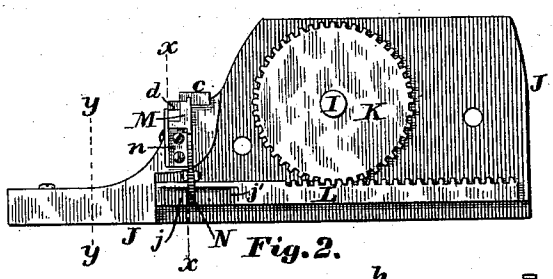


Fig. 2.

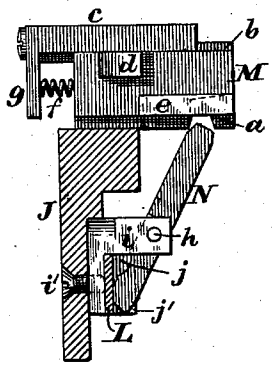


Fig. 3.

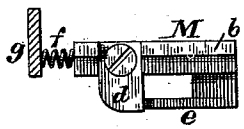


Fig. 7.

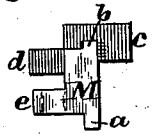


Fig. 8.

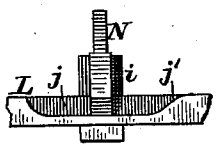


Fig. 9.

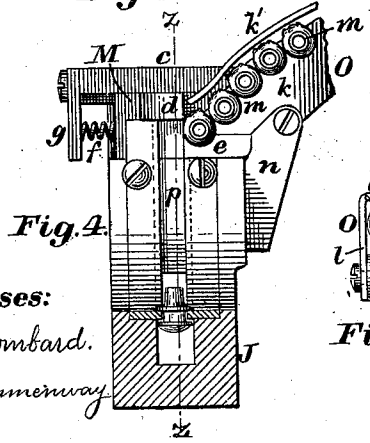


Fig. 4.

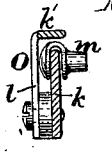


Fig. 10.

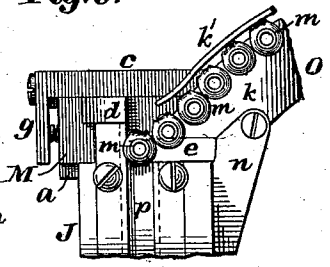


Fig. 6.

Witnesses:

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E. A. Hemmenway.

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by N. C. Lombard

Attorney.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

W. C. BRAY.

MACHINE FOR SETTING LACING STUDS.

No. 261,526. Patented July 25, 1882.

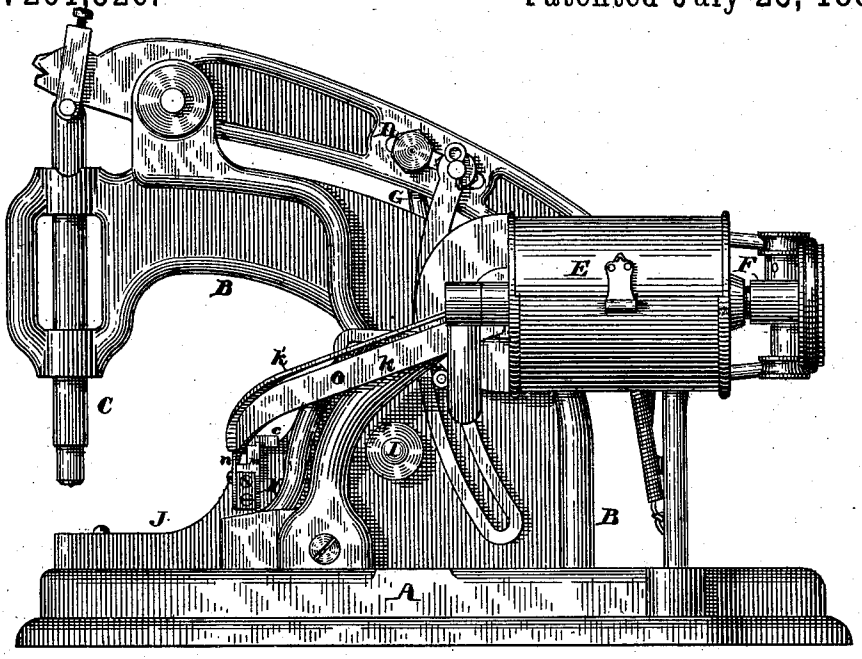


Fig. 12.

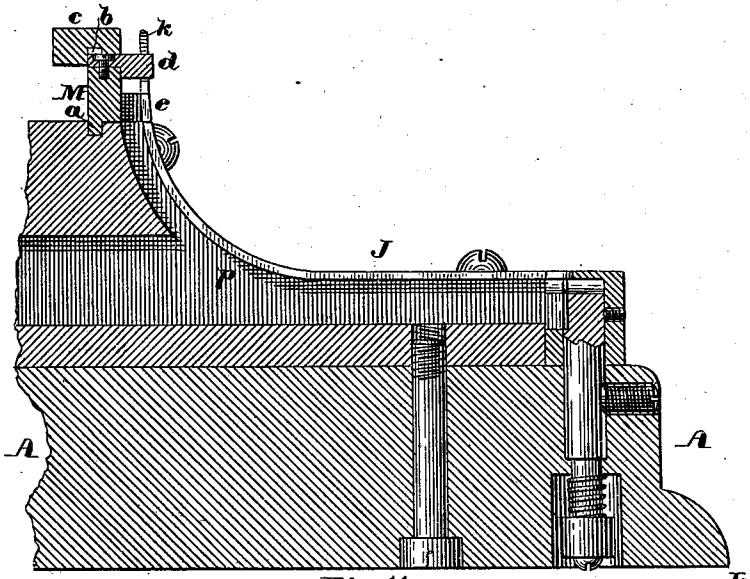


Fig. 11.

Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

WILLIAM CLAXTON BRAY, OF NEWTON, MASSACHUSETTS.

MACHINE FOR SETTING LACING-STUDS.

SPECIFICATION forming part of Letters Patent No. 261,526, dated July 25, 1882.

Application filed March 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CLAXTON BRAY, of Newton, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Machines for Setting Lacing Studs or Hooks, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a certain improvement in machines for setting lacing studs or hooks; and it consists in a novel method of separating and feeding the lacing-studs during their passage from the hopper to a position between the setting-tools, which will be best understood by reference to the following description of the drawings, in which—

Figure 1 is a side elevation of a machine embodying my present invention. Fig. 2 is an elevation of the inner face of the removable plate or portion of the goose-neck with the mechanism mounted thereon. Fig. 3 is a section on line *x x* on Fig. 2. Fig. 4 is a section on line *y y* on Fig. 2. Figs. 5 and 6 are views similar to Fig. 4, illustrating the method of separating the lacing-studs. Figs. 7 and 8 are respectively a plan and end view of the separator-slide. Fig. 9 is an inverted plan of a portion of the feed-plunger and lever operated thereby. Fig. 10 is a section of the chute or roadway. Fig. 11 is a vertical longitudinal section on line *z z* on Fig. 4, and Fig. 12 is an elevation of that side opposite to Fig. 1. Figs. 3 to 11, inclusive, are drawn to a scale about two and one-half times as large as the scale of Figs. 1, 2, and 12.

A is the bed of the machine; B, the goose-neck extending upward therefrom; C, the setting-plunger; D, the operating-lever; E, the hopper, and F the forked frame, all arranged and adapted to operate substantially as shown and described in Letters Patent No. 212,124, granted to Mellen Bray, February 11, 1879, and Letters Patent No. 244,738, granted to me July 26, 1881.

G is a connecting rod or link, connected at its upper end to the lever D and at its lower end to the lever H, made fast upon the shaft I, mounted in bearings in the goose-neck B and the detachable plate J. The shaft I has secured thereon the gear-wheel K, the teeth of which engage with the teeth formed upon the upper side of the feed-plunger L, and thus a reciprocating motion is imparted to said feed-plunger, substantially as described in the last-mentioned Letters Patent before cited.

All of the above-described mechanism forms no part of my present invention; but I will now describe that which pertains directly thereto.

Upon the forward portion of the removable plate J is mounted a sliding block, M, provided with two ribs, *a* and *b*, which fit into grooves, one in the plate J and the other in the piece *c*, secured to the plate J, and serve to guide the block M as it reciprocates. The block M is also provided with the lug *d* and horizontal L-shaped arm *e*, the purpose of which will hereinafter be explained. The block M is moved in one direction by the action of the lever N, the upper end of which engages with a notch cut in the rib *a*, as shown in Fig. 3, and in the opposite direction by the expansion of the spring *f*, one end of which bears against the block M and the other end against the lug *g*, projecting downward from the piece *c*. The lever N is pivoted at *h* to the stand or bracket *i*, secured to the plate J by the screw *i'*, the lower end of said lever bearing against the side of the feed-plunger L. A recess, *j*, is formed in the side of the feed-plunger L, and when said feed-plunger is moved backward away from the setting-tools the action of the spring *f* upon the block M causes the lower end of the lever N to be forced into said recess *j*, and when the feed-plunger L moves forward to assume its former position the inclined surface *j'*, coming in contact with the end of the lever N, throws it outward, thus imparting the return motion to the sliding block M.

O is the inclined chute or roadway, supported near its upper end by a stand (not shown) secured to the goose-neck B, said chute being adapted to receive lacing-studs from the hopper E in the same manner as described in the Letters Patent before referred to—that is, with their axes horizontal and their necks upward. Its construction and arrangement, however, are novel features, as will now be described. It is made of a skeleton form, being composed simply of the plates or strips *k* and *k'*, connected together by the straps *l*, the studs *m*, sliding upon the upper edge of the plate *k*, hanging by their hooked heads, and being prevented from tumbling off by the plate *k'*,

placed at right angles to the plate *k* at the proper distance above its upper edge. Instead of being twisted spirally, as in the previous construction, the chute O is simply curved at its lower end into a direction at right angles to its upper end, so that the shanks of the studs or the axial lines of said shanks are kept in a horizontal plane during their passage down the chute, instead of being turned into a vertical position in the chute, as was formerly the case. The lower end of the plate *k* of the chute O is secured by the bracket *n* to the plate J, and brought flush with one side of the roadway *p*, which guides the studs to the proper position between the setting-tools. The front end of the roadway *p* is made horizontal, as in the previous construction; but instead of being made straight throughout its length the rear end is curved upward, so as to form a vertical angle with the chute O.

The arm *e*, before referred to, projecting from the block M, is made with one portion parallel to the front face of said block, and of a thickness equal to the thickness of the plate *k* of the chute O and the edges of the plates which form the sides of the roadway *p*, and is adapted by the motion of the block M to open and close the upper end of the roadway. The lug or stop *d* is also adapted to open and close the lower end of the chute O.

The operation of my invention is as follows: With the parts in their normal position, as shown in Figs. 1, 5, and 6, the lower end of the chute O will be open, but the upper end of the roadway *p* will be closed by the arm *e*, as clearly shown in Fig. 5, and the first one of a line of studs, *m*, that slides down the chute O will drop off the lower end of the plate *k* and rest upon the upper edge of the arm *e* in position to slide down the roadway *p*, as shown in Fig. 6. If, now, the operating-lever D be moved to bring the setting-tools into operation, the feed-plunger L will be drawn back, and the lower end of the lever N will drop into the recess *j*, as shown in Figs. 2, 3, and 9, thus allowing the block M to carry the arm *e* to one side, opening the upper end of the roadway *p*, and allowing the stud *m* which was resting upon the arm *e* to slide down said roadway to its horizontal portion, as shown in Fig. 4, into a position in front of the end of the feed-plunger L, ready to be carried by said plunger into the desired position between the setting-tools. At the same time the stop *d* will close the lower end of the chute O and prevent any other of the studs *m* from dropping into the roadway *p* until by a reverse motion the parts assume their former positions, and another stud *m* is allowed to drop down and rest upon the arm or stop *e*.

By my present invention I am enabled to produce an accurate separating device very satisfactory in its operation, and which will insure the feeding of a single stud at a time to the setting-tools. I am also enabled to reduce the cost of construction, as by curving the end of the roadway *p* upward the chute O is given but a single curve, thus avoiding the necessity of giving it an accurate spiral twist, as described in the before-cited Letters Patent. The stud *m* as it enters the roadway *p* and rests upon the arm *e* is in a position with its eccentric neck uppermost and the hook side of its head pointing downward, and as it slides down the curved portion of said roadway to the horizontal portion thereof the stud is gradually turned from a horizontal into a vertical position, and is fed forward to the setting-tools in the same position as was heretofore the case—namely, with its shank uppermost, its eccentric neck toward the rear, and the hook side of its head toward the front of the machine, as clearly set forth in the first-mentioned Letters Patent before referred to.

It is obvious from the foregoing description that the sliding block M may be mounted upon the main portion of the goose-neck B instead of upon the plate J, and that the roadway *p* may be formed in the main portion of the goose-neck B or a portion of the bed A, or in a piece separate from either the main frame or the plate J, without in the least departing from the principle of my invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The inclined chute O, curved at or near its lower end, as set forth, and adapted to guide the studs throughout its entire length with their axes in a horizontal plane, in combination with the roadway *p*, curved upward at its rear end and adapted to turn the studs from a horizontal into a vertical position, and mechanism interposed between said chute O and the roadway *p* for separating the studs and delivering them one at a time to said roadway, substantially as and for the purposes described.

2. The combination of the inclined chute O, the curved roadway *p*, the sliding block M, provided with the lug or stop *d* and arm *e*, and mechanism for imparting to said sliding block a reciprocating motion, substantially as described.

3. The combination of the inclined chute O, the curved roadway *p*, the sliding block M, provided with the lug or stop *d* and arm *e*, the spring *f*, the lever N, and the feed-plunger L, provided with the cam-surface *j'*, all arranged and adapted to operate substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 11th day of March, A. D. 1882.

WM. CLAXTON BRAY.

Witnesses:
N. C. LOMBARD,
W. E. LOMBARD.